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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/080,507	02/22/2002	Jae Chang Jung	00939B-068710US	1185

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EXAMINER	
LEE, SIN J	

ART UNIT	PAPER NUMBER
1752	9

DATE MAILED: 10/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/080,507	Applicant(s) JUNG ET AL.	
	Examiner Sin J Lee	Art Unit 1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 February 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 5-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. *09/465,111* .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *6-8* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 5-7, and 10-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Kajita et al (6,180,316 B1).

Kajita, in his Synthesis Example 8, teaches a copolymer (A-4) made from the monomers of 5-t-butoxycarbonylnorbornene, 8-methyl-8-hydroxymethyltetracyclo[4.4.0.$1^{2,5}$.$1^{7,10}$]dodec-3-ene, maleic anhydride, and 2,5-dimethyl-2,5-hexanediol diacrylate, and the chemical structure for the copolymer is shown in col.34, lines 45-col.35, lines 1-20. Kajita's copolymer of Synthesis Example 8 teaches present copolymer of <Chemical Formula 5> of present claim 3: The repeating unit (20-2) of Kajita's copolymer teaches present repeating unit a of the Formula 5 because present R_1, R_2, R_5, and R_6 can all be hydrogen atoms, present R_3 can be a methyl group (which is a straight C_1 alkyl group), and present R_4 can be $-CH_2OH$ (*which is a straight C_1 alkyl group including one hydroxyl group*). The repeating unit (20-3) of Kajita's copolymer teaches present repeating unit b of the Formula 5. The repeating unit (20-4) of Kajita's copolymer teaches present repeating unit c of the formula 5

because present R' and R" can both be hydrogen atoms and present R can be a branched C_8 alkyl group. Kajita furthermore teaches the mol% for the repeating unit (20-2) to be 9 mol%, the mol% for the repeating unit (20-3) to be 45 mol%, and the mol% for the repeating unit (20-4) to be 10 mol%. These numbers fall within the present ranges of claim 3. Therefore, Kajita teaches present inventions of claims 1-3 and 5.

With respect to present claims 6, 7, and 10, in his Synthesis Example 8, Kajita carries out the polymerization reaction for 8 hours at *70°C* in a *nitrogen* stream in the presence of *azobisisobutyronitrile* (polymerization initiator). Therefore, the prior art teaches present inventions of claims 6, 7, and 10.

In Examples 6-8, Kajita uses his copolymer (A-4) made in his Synthesis Example 8 together with an organic solvent, and a photoacid generator. Therefore, the prior art teaches present inventions of claims 11 and 12. Kajita teaches triphenylsulfonium trifluoromethanesulfonate (which is the presently claimed triphenylsulfonium triflate in claim 13) as one of six examples of the photoacid generators used in his working examples. Since there are only several examples to choose from, it is the Examiner's position that one of ordinary skill in the art would immediately envisage using triphenylsulfonium trifluoromethanesulfonate as Kajita's photoacid generator. Therefore, the prior art teaches present invention of claim 1.

Kajita teaches (col.23, lines 18-37) that his photoresist composition is applied on a silicone wafer. The resist film thus prepared is optionally subjected to a prebaking treatment, then exposed to radiation (such as ArF excimer laser or KrF excimer laser) to

form a resist pattern. The exposed resist film is then subjected to a post-exposure baking treatment which is carried out at a temperature usually from 30 to *200°C*. Because 200°C is included as the higher end of the taught range, it is the Examiner's position that one of ordinary skill in the art would immediately envisage carrying the post-exposure baking step at 200°C in Kajita's invention. A desired resist pattern is then formed by developing the exposed areas on the resist film using an alkaline aqueous developer solution such as tetramethylammonium hydroxide (col.23, lines 48-59). Therefore, the prior art teaches present inventions of claims 14-18. Kajita also teaches (col.28, lines 27-37) that his photoresist composition is an ideal material for the manufacture of semiconductor devices. Therefore, the prior art also teaches present invention of claim 19.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kajita et al (6,180,316 B1).

With respect to present claim 8, the polymerization reaction in Kajita's Synthesis Example 8 is carried out in a nitrogen stream (as discussed above) which inherently

would have a certain pressure. Although Kajita does not disclose what the pressure was, one of ordinary skill in the art repeating Kajita's experiment would be motivated to use a nitrogen pressure resulting in formation of the desired product. It is the Examiner's position that this pressure would lie within the very broadly claimed present range of 0.0001-5 atm. Therefore, present claim 8 is obvious over Kajita.

With respect to present claim 9, although Kajita uses 1,2-diethoxyethane as the solvent for the polymerization reaction in his Synthesis Example 8, Kajita also teaches (col.16, lines 10-20) the equivalence of 1,2-diethoxyethane to the presently claimed benzene or toluene. Because these solvents were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to replace 1,2-diethoxyethane with benzene or toluene in Kajita's Synthesis Example 8 with a reasonable expectation of achieving a photosensitive resin composition exhibiting high transparency to radiation, superior dry-etching resistance, high resolution, and an excellent property balance. Therefore, Kajita's teaching would render obvious present invention of claim 9.

Allowable Subject Matter

5. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Kajita does not teach or suggest presently claimed polymers of claim 4.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is (703) 305-0504. The examiner can normally be reached on Monday-Friday from 8:30 am EST to 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Janet Baxter, can be reached on (703) 308-2303. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9311 for after final responses or (703) 872-9310 for before final responses.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0661.

S. Lee
10/17/03

JANET BAXTER
SUPERVISORY PATENT EXAMINER
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